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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|-------------------|
| 10/609,088 | 06/27/2003 | Gregory J. Ward | 12598.0144.NPUS00 | 7547 |
| 7590 | 06/07/2005 | | | |
| Craig M. Lundell 750 Bering Drive Houston, TX 77057-2198 | | | | EXAMINER |
| | | | | SACKY, EBENEZER O |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1626 | |

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/609,088 | WARD ET AL. |
| | Examiner | Art Unit |
| | EBENEZER SACKY | 1626 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 February 2004.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-6,8-13 and 15-20 is/are rejected.
 7) Claim(s) 7 and 14 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>02/09/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 1-20 are pending.

Information Disclosure Statement

The I.D.S filed 02/09/04 is acknowledged and has been entered into the file. A signed copy of the 1449 is attached herewith.

Claim Objection

Applicant is being advised that should claim 1 be found allowable, claim 20 will be objected to under 37 CFR 1.75 as being substantial duplicate thereof. Note that there is no difference in the preamble in each of the claims. The specification has support for one method for purifying acrylonitrile. Claim 1 has all the listed properties and therefore claim 20 is considered as substantial duplicates of claim 1. If applicants choose to argue or admit on the record that the methods are different, a restriction of the method(s) may be appropriate then. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other claim under 37 CFR 1.75 as being a substantial duplicate of the allowed claim. See MPEP.... 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

1. The claims recite a method for removing acrolein from a process stream. It is not entirely clear what is obtained after the removal of the acrolein from the process stream. However, it appears from reading applicant's specification, page 2, lines 1-29 that the intended method is the purification of acrylonitrile. Additionally, what is an acrolein derivative?
2. It is not clear if the acid catalyst is part of the process stream or not.

Thus, clearly defining the process claims would appear to obviate this rejection.

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-6, 8-13, 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens et al., (U.S. Patent number 3,185,636) and Shibano et al., (U.S. Patent number 4,625,059) in combination.

Applicants claim a method for removing acrolein from a process stream comprising:

- (a) providing a process stream comprising acrolein; and
- (b) reacting said acrolein in the presence of an acid catalyst with a scavenger compound containing a reactable thiol or hydroxyl moiety to form an acrolein derivative in a refined process stream.

Determination of the scope and content of the prior art (MPEP §2141.01)

Stevens et al., teach the removal of saturated carbonyls from acrylonitrile, (which is the purification of acrylonitrile) by absorbing in water reaction products from ammoniation, which includes acrylonitrile at an adjusted pH of about 6.5 to 8.5. See the entire reference, especially, column 1, lines 1-46, column 2, lines 1-16.

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between the instant method and Stevens is the use of specific compounds (scavengers) to remove the impurities in the presence of the required acid catalyst. However, Shibano discloses in the purification of unsaturated carboxylic acids and esters that a compound containing at least one mercapto group in its molecule reacts with aldehyde impurities very selectively under moderate conditions in the presence of an acid catalyst. See the column 1, lines 1-40, column 2, lines 59-69, column 3, lines 54-61, column 4, lines 39-40 and column 5, lines 5-17.

Finding of *prima facie* obviousness---rational and motivation (MPEP §2142-2143)
Thus, at the time of filing this application, one of ordinary skill in the art in possession of Stevens and Shibano is in possession of the instant method because similar process parameters such as pH and end products exist. Claims 9 and 10 recite a percentage of water content in the process stream. This limitation is not disclosed by any of the references, however, such a requirement is well within the purview of the skilled artisan. Hence, one of ordinary skill in the art would thus, have been motivated to purify acrylonitrile with the required scavengers and acid catalyst of Shibano with the expectation that the resulting product would maintain high yield and/or selectivity because a precise indicated pH range was preferred.

Accordingly, it would have been *prima facie* obvious to one of ordinary skill in the art to purify acrylonitrile as disclosed by the references with a pH maintenance element because an explicit pH range was preferred and maintaining pH has been expected to operate with a reasonable expectation of success. Therefore, the instantly claimed method would have been suggested to one of ordinary skill absent a showing of unexpected results and/or properties.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to E. Sackey whose telephone number is (571) 272-0704. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph K. McKane, can be reached on (571) 272-0699. The fax phone number for this Group is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.

EOS
May 31, 2005


T. Solola
Primary Patent Examiner
Art Unit 1626, Group 1600
Technology Center 1